



**SPARTAN  
CONTROLS**

Experience Industrial Innovation

## **Combustion Management for Industrial Process Applications**

Safe, Operability, Reliability, Code Compliance

- Burner Management
- Burner Application
- Ignition and Controls
- Fuel Trains



***Spartan Controls is the leading provider of automation, valves, measurement, process control, solutions and services in Western Canada.***

For over 55 years, Spartan has provided customers with high performance solutions, industry expertise, lifecycle support, and technical training – delivering value our Customers want.

Our automation solutions are used in all process industries including oil and gas, oil sands, mining, pulp and paper, power, pipeline, and municipal. We are dedicated to providing exceptional customer experiences and delivering superior business results where expertise and collaboration come together.

### **Our Vision**

*Creating a Sustainable Modern World with Innovative Automation.*

### **Our Mission**

*Serve the Customer first, by creating, delivering, and sustaining value they want.*

### **The Process Industries We Serve**

The industry segments we serve are key drivers of Canada's economy. Spartan has been at the center of it for over 50 years, supporting companies that make Canada great.

With over 10,000 years of combined industry experience, Spartans are driven to serve our Customers with the highest degree of responsiveness, knowledge and commitment, and to be recognized as the benchmark for exceptional customer value, service and loyalty.

*Serving our Customers with the highest degree of responsiveness, knowledge and commitment.*



Spartan Controls can apply proven process and combustion knowledge, products and experience to support your projects from beginning to end.

Spartan is your single source for the complete design and full integration of combustion systems for your process heating needs.

We can support the complete project scope including manufacturing assembly, functional testing, field commissioning, start-up, tuning optimization, and operations training.

With over 100 years of combined experience in combustion system applications, we have application specialists and design experts for a wide variety of industrial process.



## Industrial Energy

*Seamless, Cost Effective, and Compliant Performance*

### Expertise

- *Full system support from 100,000 BTU/h to 100 million+ BTU/h*
- *Once-through steam generators (OTSG), heat recovery steam boiler (HRSB), boilers, reforming/cracking furnaces, cement kilns, process heaters, line heaters, sulfur furnaces*
- *Combined systems and product integration capabilities for compliance and optimization*
- *Natural and forced draft systems – single or multi-burner/multi-fuel designs*
- *Dedicated team of experts and best-in-class products for combustion solutions*

### Our Mission

- Comprehensive knowledge of the **CSA B149.3** code requirements
- Proven project execution experience and process delivering code compliant solutions
- Strategic planning support for upgrades, lifecycle initiatives and administrative support
- Scalable scope – delivering complete solutions independently or as an integrated resource within our Customers' engineer teams, contributing to product design, sizing and best practices



## The Role of a Combustion System

Combustion solutions are used in a variety of applications:

- Separators
- Tank heaters
- Incinerators
- Flare stacks
- Heater treaters
- Process heaters
- Reaction reformers
- Re-gen heaters
- Any customized or specialty unit applications
- Recovery boilers
- Lime kilns
- Power/hog boilers
- Oil heaters
- Potash dryers
- Boilers

Combustion solutions are used for specific reasons:

- Inhibit start-up when unsafe conditions exist
- Protect against the unsafe operating conditions and admission of improper quantities of fuel to the furnace
- Provide the operator with status information and troubleshooting assistance
- Initiate a safe operating condition or conduct a shutdown interlock if unsafe conditions exist
- Protect people, property, and processes

The combustion solution is responsible for the safe start-up, operation and shutdown of a gas fired burner on process heaters used in many industries. The system monitors and controls igniters and burners; utilizes flame scanners to detect and discriminate between the igniter and main flames; employs safety shut-off valves, pressure, temperature, flow and valve position limit switches and uses blowers to cool the scanners and/or provide combustion air for the igniters.

Burner management systems (BMS) are defined as safety instrumented systems (SIS) if they contain sensors, a logic solver and a final control element according to IEC 61511. All safety critical processes must be analyzed and their potential risk determined as its proper operation is crucial to the safety of a boiler.

## **Spartan Combustion Management Capabilities**

*Our project team has experience personnel with the right qualifications to support all your combustion projects.*

Combustion systems are engineered to safely operate and manage fired equipment. What makes these applications unique among typical process control and automation projects is the need to have deep knowledge in the field of combustion engineering. These systems require skilled application specialists to complete the design, configuration and commissioning of any fired appliance – an area of expertise in which Spartan distinguishes itself. With decades of experience in combustion engineering, Spartan knows how to safely and efficiently control the combustion process, understanding that the effects of combustion on the mechanical integrity of the surrounding equipment and process control is critical.

Understanding specialized requirements and having the trained personnel on our project team to execute this scope of work are significant differentiators for Spartan. We strive to ensure that the best possible resources are assigned to each specific project in a manner that leverages the existing knowledge and the experience of each member of our respective teams.



## Environmental Combustion

*Spartan Controls is committed to supporting its Customers' combustion applications and fired appliances.*

With a full portfolio of products, technical support and experience, Spartan can help ensure regulatory compliance, productivity and performance. From data analysis, to supporting the Multi-sector Air Pollutants Regulations (MSAPR) including baseline reporting and recommendations, we can support Customers' sites with technical, operational and environmental strategies to meet federal compliance expectations.

Using proper processes and outlined techniques for gathering data, we can help identify and recommend solutions to ensure reductions, therefore helping you meet and verify ppm standards for NO<sub>x</sub> and CO while still optimizing fuel consumption and O<sub>2</sub> trim strategies.



### Program Support

- Fleet/multi-appliance analysis
- Leveraging field technicians for multiple site units
- Lifecycle planning with upgrades (LO NO<sub>x</sub>-Ultra LO NO<sub>x</sub>) applications
- Program cycle audits, continuous review and planned testing (PM)

### Service Support

- Pre-audit, installation, and commissioning
- Post-audit service and support
- 3<sup>rd</sup> party analysis and direct feedback/recommendations



## CSA B149.3 Compliance

Spartan has invested in building a team of professionals capable of executing burner management projects per the CSA and National Fire Protection Association (NFPA) guidelines. Industries in Western Canada using gas fired appliances in their operations are expected to comply with the CSA safety standard (CSA B149.3) aimed at ensuring the safe operation of gas/propane fired equipment. Spartan standardizes on CSA B149.3 as a baseline offering and compliance is always included on all projects.

*Spartan utilizes our extensive process knowledge to help eliminate GHG emissions and provide useful documentation detailing emissions compliance, carbon tax credits and reporting.*

## Environmental and Social Governance

One of the largest factors impacting competitiveness for the Canadian oil and gas industry is the cost of environmental compliance. Using proper processes and outlined techniques for gathering data, our goal is to ensure our companies align with the environmental and social governance (ESG) strategy to match with society's demands.

Spartan's experienced engineers can complete a detailed analysis of available data and apply engineering practices and historical knowledge to provide predictive modelling and high efficiency products.

We can help identify and recommend solutions to ensure reductions to meet and verify ppm standards for NOx and CO while still optimizing fuel consumption and O2 trim strategies.

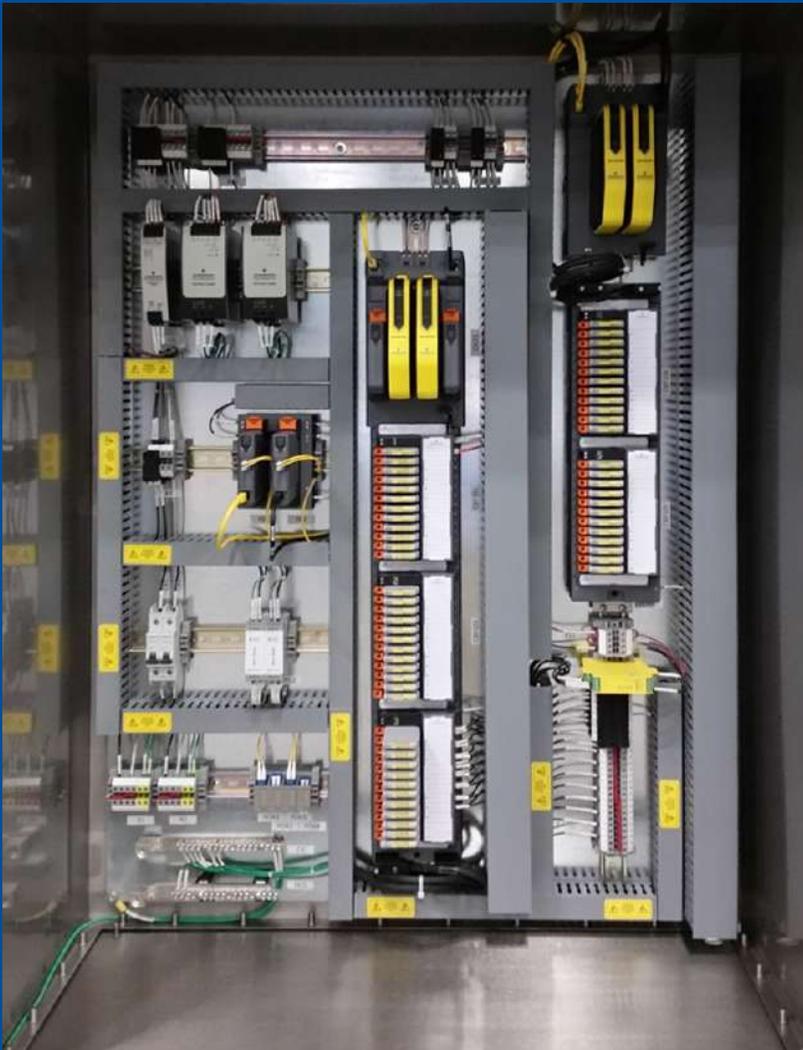


## Safety Through Layers of Protection

*Our combustion experts can help with selection, design, and best practices for SIL, SIS, and safety requirement (SRS) specifications.*

Safety integrity is defined as the likelihood of a safety instrumented system satisfactorily performing the required safety functions under all stated conditions within a given period. A safety integrity level (SIL) is defined as a discrete level for specifying the safety integrity requirements of safety functions.

Today, the main cause of SIS failure is the failure of field devices. A protective system needs to address overall health of safety loops by incorporating the checking of field devices in its overall design. Consequently, the ability to provide an integrated safety solution from sensor to actuator should be an important criterion when selecting an SIS.



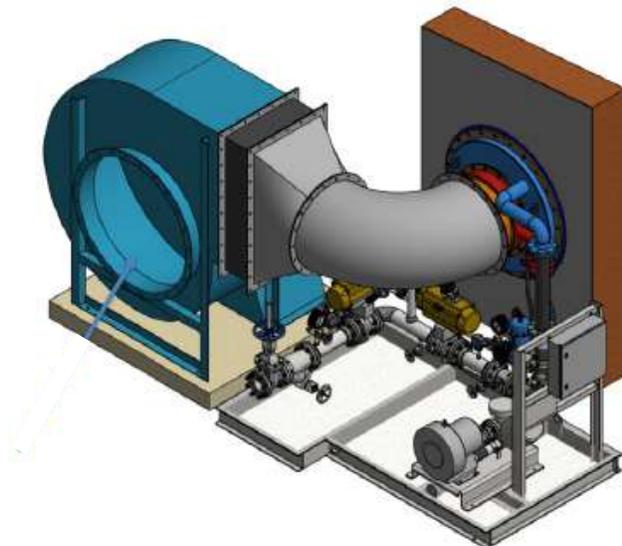
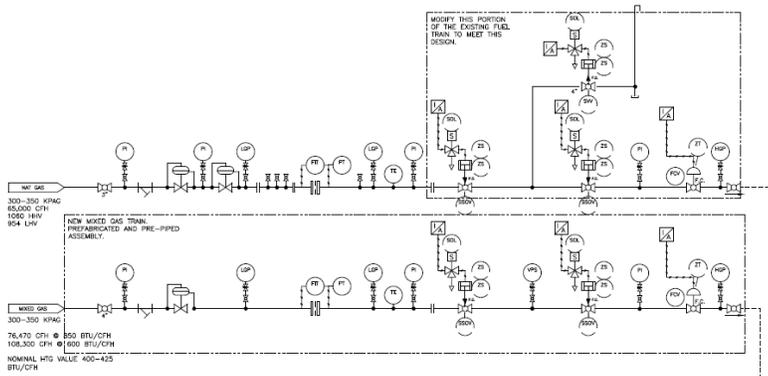
## Safety Through Layers of Protection

*Our experienced team ensures you have the proper documentation needed for your project.*

All completed compliance projects require the proper support documentation to ensure years of reliable operation, troubleshooting and support.

Proper documentation helps through all project phases:

- Assembly
- Installation
- Operation





## Proven Project Execution

*Our combustion team is focused on delivering the complete solution.*

1. Rosemount™ Pressure Transmitters
2. Fisher™ Fuel Control Valve
3. Fisher™ Pressure Regulator
4. Winters Pressure Gauge at test points
5. 'Y' Strainer
6. VCI Safety Shut-off Valves with open/close indication
7. Local junction boxes
8. BMS Panel
9. DeltaV™ SIS Logic Solver
10. DeltaV™ SIS CHARMS I/O

## Key Product Lines

### DeltaV™/DeltaV™ SIS

These systems are used for fired equipment of any size and draft configuration (natural, induced and forced).

Typical applications include:

- Power boilers (watertube and firetube)
- OTSG/HRSG
- SRU (reaction furnace, reheaters, and TG incinerator)



### Igniters and Flame Scanners

High energy spark ignition (HESI) is a capacitance-based ignition systems providing high reliability, self-cleaning and retractable. Certified for hazardous locations.

Flame Scanners are externally mounted to detect flame's radiation in the IR or UV spectrum.

These are sourced for efficiency and safety from various suppliers including:

- FireEye®
- Chentronics



### Fuel Train Components

Fuel train components include: Fisher™ regulators, Fisher™ control valves, Rosemount™ transmitters, Winters switches, ASCO™ solenoids, VCI safety shutoff valves, Winters gauges, isolation valves and other ancillary devices.



### Burners

Burners are designed specifically for the application and are sourced for efficiency and safety from various suppliers, including:

- Zeeco
- Maxon, Riello
- John Zink/Coen
- Fives NA



## Featured Products



### DeltaV™

- Designed to be implemented in a distributed architecture, close to the equipment it is safeguarding – resulting in reduced wiring costs and system complexity
- Approved for use in SIL 1, 2, and 3 safety applications as defined by IEC 61508
- Hardware is modular – scaling in sizes of 16 to 30,000 with configurable I/O. Controllers available include M-series, S-series, PK, SIS



### Rosemount™

- Delivers integrated pressure, DP flow and DP level solutions
- Advanced diagnostics detect process and electrical loop issues before they impact production
- Wireless capability allows for quick and cost-effective addition of new points to eliminate operator rounds



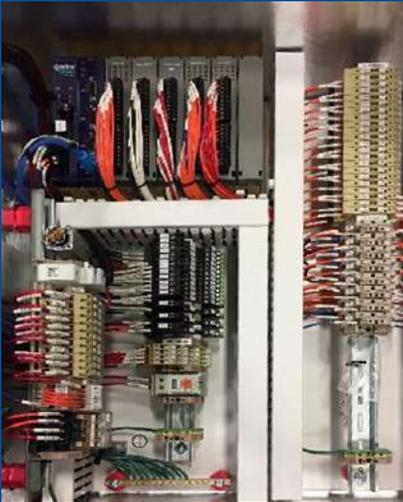
### VCI™

- Available in sizes of up to 12" for pressures up to 6,000 psig
- Designed for material compatibility, ambient conditions
- Blow out proof stem and zero leak packing
- Bonnet extensions – wall thicknesses and lengths that keep heat transfer down



### Fisher™

- Digital valve controller capable of operating using 4-20 mA,
- HART, Fieldbus, or Profibus communication protocols,
- Linkageless, non-contacting technology for optimum valve positioning in the most reliable fashion with no wearing parts to maximize its lifecycle
- Modular design to easily replace critical components, most of which can be replaced in the field without replacing tubing or field wiring
- Best-in-class performance and valve diagnostics



### FLAMEVue™

FLAMEVue is a Spartan Engineered, pre-configured BMS panel with proven design built at our in-house ISO 9001, CSA certified panel shop. Spartan's BMS Solution greatly reduces commissioning and start-up time and eliminates job-site learning, and includes different tiering of controllers to handle the BMS such as:

- Profire
- AB
- Honeywell



## **Our Process**

### **Regional Support Centres**

Our company understands that when our Customers need our help, we need to be close by. Our employees, or Spartans as we refer to ourselves, live in the communities in which we work. Spartan has a presence in 14 communities with more than 515,000 sq. ft of facility space to support our Customers throughout Western Canada.

Comprising of 209,000 sq. ft, the largest of its kind Western Canada, our Edmonton Automation Centre provides unmatched breadth and depth of support to our Customers. It is our primary facility for assembly, service and repair operations. It also serves as our warehouse and shipping and receiving terminal which operates on a same day/next day delivery cycle.

### **Manufacturing and Fabrication Capabilities**

At our Calgary Solutions Centre we provide Customer pneumatic, electronic, electrical, and hazardous location panels and assemblies in one of the largest facilities in Canada, with 80,000 sq. ft of fabrication, storage, staging, and warehousing space.

Spartan Controls is CSA-approved for in-house certification of custom assemblies for hazardous locations and general purpose areas and it's pneumatic assemblies are built to ABSA standards.

In addition, Spartan has OEM and alliance partnerships in place with over 120,000 sq. ft of combustion and fabrication facility space in Squamish, BC.



## Our People

Spartan Controls provides integrated industry solutions and advanced services focused on improving our Customer's operational reliability, safety, and performance. Our team of combustion specialists are focused on providing consulting and pre-packaged combustion control, emissions control, and burner management applications. A strength within the team is driving efficiency and environmental compliance across all industry applications. Our team specializes in CSA B149.3 compliance programs that include IEC 61511 processes to ensure the safety of your plant throughout its lifecycle.



**Call us or request a quote online 24/7**

+ 1 (877) 278-6404

### **British Columbia**

Burnaby +1 (604) 422-3700 • Fort St. John +1 (250) 785-0285 • Prince George +1 (250) 960-9765

### **Alberta**

Calgary +1 (403) 207-0700 • Edmonton +1 (780) 468-5463 • Fort McMurray +1 (780) 790-0440  
Grande Prairie +1 (780) 539-1161 • Whitecourt +1 (780) 778-5445

### **Saskatchewan**

Midale +1 (306) 458-2223 • Regina +1 (306) 721-6925 • Saskatoon +1 (306) 934-3484

Visit us online

[www.spartancontrols.com](http://www.spartancontrols.com) | [info@spartancontrols.com](mailto:info@spartancontrols.com)

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